



EFFECTIVENESS OF A SELF-INSTRUCTIONAL MODULE ON KNOWLEDGE OF KANGAROO MOTHER CARE AMONG POSTNATAL MOTHERS ADMITTED IN SELECTED HOSPITALS OF THE VIDARBHA REGION: A QUASI-EXPERIMENTAL STUDY

Nursing Science

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ABSTRACT

Background: Low birth weight (LBW) accounts for approximately 26% of newborns in India and remains a major contributor to neonatal mortality and morbidity. Kangaroo Mother Care (KMC) — comprising skin-to-skin contact, exclusive breastfeeding and mother-infant support — is a low-cost, evidence-based intervention that reduces hypothermia and improves survival, particularly where sophisticated neonatal care is scarce. Postnatal mothers' knowledge of KMC in resource-limited settings is often inadequate. **Objectives:** To assess pre-existing knowledge of KMC among postnatal mothers, evaluate the effectiveness of a self-instructional module (SIM) in improving that knowledge, and examine associations between knowledge scores and selected demographic variables. **Results:** Mean knowledge score rose from 11.53 ± 2.18 (38.44%) pre-test to 25.46 ± 1.11 (84.88%) post-test, a highly significant gain ($t = 57.51$, $p < 0.001$), leading to rejection of the null hypothesis. Post-test, 98.33% of mothers achieved excellent knowledge compared with none pre-test. Pre-test knowledge was significantly associated with occupation, monthly income and parity ($p < 0.05$); post-test knowledge was significantly associated with age and parity ($p < 0.05$). **Conclusion:** The self-instructional module was highly effective in improving postnatal mothers' knowledge of Kangaroo Mother Care and is recommended as a low-cost teaching strategy for routine postnatal education.

KEYWORDS

Kangaroo Mother Care, Postnatal Mothers, Self-instructional Module, Knowledge, Low Birth Weight.

INTRODUCTION

Low birth weight babies constitute a significant public health problem in developing countries and remain a leading cause of neonatal mortality and morbidity. While advances in neonatal intensive care have improved survival, such technology is expensive, frequently inaccessible in rural and peripheral settings, and tends to separate infants from their mothers at a critical period of bonding. In India, an estimated 26% of newborns are of low birth weight, and many deliveries — especially in rural areas — occur where trained neonatal staff and equipment are limited.

Kangaroo Mother Care, first described by Rey and Martinez in Bogotá, Colombia in 1983, offers a low-technology, low-cost alternative that combines continuous skin-to-skin contact, frequent breastfeeding and early hospital discharge. It has been shown to stabilise infant temperature, respiration and blood glucose, promote breastfeeding, and strengthen maternal-infant bonding, without adverse physiological effects. The World Health Organization estimates that around 2 million low-birth-weight infants are born annually, contributing disproportionately to the global burden of neonatal death; KMC has been identified as an effective strategy for meeting these infants' needs for warmth, nutrition and protection.

Despite this evidence base, postnatal mothers in many Indian settings receive only informal advice on KMC, and formal institutional policy mandating its practice is frequently absent. This gap between evidence and practice, observed by the investigator during clinical postings, provided the impetus for the present study, which examines whether a structured self-instructional module can meaningfully improve mothers' knowledge of KMC.

Objectives

- To assess the knowledge regarding Kangaroo Mother Care among postnatal mothers.
- To evaluate the effectiveness of a self-instructional module on Kangaroo Mother Care among postnatal mothers.
- To associate pre-test and post-test knowledge scores regarding Kangaroo Mother Care with selected demographic variables (age, education, occupation, monthly income, type of family, residential area and parity).

Methodology

An interventional evaluative research approach was used to assess the effectiveness of a Self-Instructional Module (SIM) on Kangaroo Mother Care (KMC) in improving the knowledge of postnatal mothers. A quasi-experimental, one-group pre-test/post-test design without a control group was adopted. The study included 60 postnatal mothers. The study was conducted in the postnatal wards of selected

hospitals of the Vidarbha region, Maharashtra, India, both affiliated medical college hospitals. The study protocol was approved by the Institutional Ethics Committee, and permission was obtained from the medical superintendents of the participating hospitals prior to the pilot and main study. Written informed consent was obtained from each mother after explaining the purpose and nature of the study in a language she understood, and confidentiality of the information provided was assured throughout. Sixty postnatal mothers who met the eligibility criteria were enrolled using non-probability convenience sampling. Mothers who had previously attended KMC classes or who were health professionals (or closely related to one) were excluded. The main study proceeded unmodified. Main data collection took place over three weeks, from 15 March to 5 April 2010. A structured self-administered questionnaire with two sections was used: Section I recorded demographic characteristics (age, education, occupation, monthly income, type of family, residential area, parity); Section II comprised 30 multiple-choice knowledge items covering meaning and components, benefits, eligibility, preparation, procedure, duration and follow-up of KMC, each scored 1 for a correct and 0 for an incorrect response. Content validity was established by 12 experts (one physician, eight child-health nursing specialists, one obstetrics and gynaecology specialist, one statistician and one language expert), and suggested modifications were incorporated. Reliability was estimated using the Spearman-Brown coefficient ($r = 0.73$, $p = 0.03$), indicating an acceptable level of internal consistency.

The self-instructional module, covering the meaning, components, benefits, eligibility, preparation, procedure, duration and follow-up of KMC, was developed from a review of literature and expert opinion, translated into Marathi and back-translated into English for accuracy. Following written informed consent, mothers completed the pre-test questionnaire (approximately 30 minutes), after which the SIM was administered the same day. The post-test was conducted on the seventh day; mothers discharged before day 7 were followed up at home using contact details recorded at recruitment. Data were analysed using descriptive statistics (frequency, percentage, mean, standard deviation) and inferential statistics. The paired t-test was used to test the study hypothesis by comparing pre-test and post-test knowledge scores. Unpaired t-test and one-way ANOVA were used to examine associations between knowledge scores and demographic variables, with a two-category variable and multi-category variable respectively. A p-value of less than 0.05 was considered statistically significant.

RESULTS

Most mothers (38.3%) were aged 25–27 years; 43.3% were educated to higher secondary level; 75.0% were housewives; 35.0% had a monthly family income of Rs. 4001–6000; 60.0% belonged to joint families; 61.7% resided in rural areas; and 56.7% were primiparous.

Table 1. Demographic Characteristics of Postnatal Mothers (n = 60)

Variable	Category	Frequency	Percentage (%)
Age (years)	19–21	17	28.3
	22–24	17	28.3
	25–27	23	38.3
	≥28	3	5.0
Education	Primary	7	11.7
	Secondary	16	26.7
	Higher secondary	26	43.3
	Graduate and above	11	18.3
Occupation	Housewife	45	75.0
	Daily wages	10	16.7
	Private employee	5	8.3
Type of family	Nuclear	19	31.7
	Joint	36	60.0
	Extended	5	8.3
Residence	Rural	37	61.7
	Urban	23	38.3
Parity	Primipara	34	56.7
	Multipara	26	43.3

Pre-test knowledge was predominantly average: 96.67% of mothers scored in the average range (8–15 of 30) and 3.33% scored in the poor range, with none achieving good or excellent knowledge. The overall pre-test mean score was 11.53 ± 2.18 (38.44%); the highest area-wise score was for benefits of KMC (55.66%) and the lowest for procedure of KMC (29.44%). Following administration of the SIM, post-test knowledge improved markedly: 98.33% of mothers achieved excellent knowledge (23–30) and 1.67% achieved good knowledge, with none remaining in the poor or average categories. The overall post-test mean score was 25.46 ± 1.11 (84.88%).

Table 2. Overall Pre-test and Post-test Knowledge Scores (n = 60)

Test	Maximum score	Mean	SD	Mean (%)	t-value	p-value
Pre-test	30	11.53	2.18	38.44	57.51	0.000
Post-test	30	25.46	1.11	84.88	(S)	(S)

The paired t-test confirmed a highly significant gain in overall knowledge ($t = 57.51$, $p < 0.001$), well above the tabulated value (2.00) at the 5% level of significance. Area-wise comparisons likewise showed significant gains in every domain, with calculated t-values ranging from 9.61 (preparation) to 23.93 (criteria/eligibility), all at $p < 0.001$ (Table 3). On this basis, the null hypothesis — that there is no significant increase in post-test knowledge scores — was rejected.

Table 3. Area-wise Comparison of Pre-test and Post-test Knowledge Scores (n = 60)

Knowledge area	Pre-test mean (SD)	Post-test mean (SD)	t-value	p-value
Meaning & components	2.15 (0.95)	4.75 (0.50)	18.98	0.000 (S)
Benefits	2.78 (1.16)	4.88 (0.37)	13.52	0.000 (S)
Criteria/ Eligibility	1.96 (0.89)	5.11 (0.58)	23.93	0.000 (S)
Preparation	1.00 (0.66)	1.86 (0.36)	9.61	0.000 (S)
Procedure	1.76 (0.83)	4.61 (0.64)	21.95	0.000 (S)
Duration	1.06 (0.66)	2.21 (0.45)	12.16	0.000 (S)
Follow-up	0.90 (0.68)	2.03 (0.36)	11.75	0.000 (S)
Overall	11.53 (2.18)	25.46 (1.11)	57.51	0.000 (S)

Association analysis (Table 4) showed that pre-test knowledge scores were not significantly associated with age, education, type of family or residential area ($p > 0.05$), but were significantly associated with occupation ($F = 4.58$, $p = 0.01$), monthly income ($F = 3.63$, $p = 0.03$) and parity ($t = 4.76$, $p < 0.001$). Post-test knowledge scores were not significantly associated with education, occupation, monthly income, type of family or residential area ($p > 0.05$), but were significantly associated with age ($F = 3.03$, $p = 0.03$) and parity ($t = 3.55$, $p = 0.001$).

Table 4. Association of Knowledge Scores with Demographic Variables (n = 60)

Variable	Pre-test (F/t; p)	Post-test (F/t; p)
Age	$F = 1.58$; $p = 0.20$ (NS)	$F = 3.03$; $p = 0.03$ (S)
Education	$F = 1.50$; $p = 0.22$ (NS)	$F = 1.89$; $p = 0.84$ (NS)
Occupation	$F = 4.58$; $p = 0.01$ (S)	$F = 0.35$; $p = 0.70$ (NS)
Monthly income	$F = 3.63$; $p = 0.03$ (S)	$F = 0.82$; $p = 0.73$ (NS)
Type of family	$F = 0.36$; $p = 0.75$ (NS)	$F = 0.80$; $p = 0.47$ (NS)
Residence	$t = 0.33$; $p = 0.74$ (NS)	$t = 0.06$; $p = 0.95$ (NS)
Parity	$t = 4.76$; $p < 0.001$ (S)	$t = 3.55$; $p = 0.001$ (S)

DISCUSSION

The present findings demonstrate that postnatal mothers in the Vidarbha region had markedly deficient baseline knowledge of KMC, with almost all participants (96.67%) falling in the average category and none reaching good or excellent levels pre-intervention.

The magnitude of improvement observed here — a rise in mean score from 38.44% to 84.88% — is comparable to, and in some respects exceeds, gains reported in related teaching-programme studies, suggesting that a self-paced instructional module can be as effective as facilitator-led teaching while requiring fewer institutional resources.

The association findings offer some points of contrast with existing literature. Sivapriya et al. reported a significant association between mothers' educational status and knowledge of kangaroo care, whereas the present study found no significant association between education and either pre-test or post-test knowledge.

CONCLUSION

The self-instructional module produced a highly significant improvement in postnatal mothers' knowledge of Kangaroo Mother Care across all knowledge domains, and the null hypothesis was rejected. Knowledge gains were consistent regardless of most demographic characteristics, indicating that the module is broadly applicable across the population studied. These findings support the use of structured self-instructional modules as a feasible, low-cost strategy for improving KMC-related knowledge among postnatal mothers in resource-constrained settings.

Recommendations

- A similar study may be replicated with a control group to strengthen causal inference.
- Comparative studies could examine facilitator-led teaching versus self-instructional modules.
- Kangaroo Mother Care education should be integrated into routine antenatal and postnatal care protocols, supported by institutional policy.

Source of Funding : None

Conflict of Interest: None

REFERENCES

1. Bergman NJ. Kangaroo mother care. In: Neonatology: a practical approach to neonatal diseases. Milan: Springer-Verlag Italia; 2012.
2. World Health Organization. Kangaroo mother care: a practical guide. Geneva: World Health Organization; 2003.
3. Ludington-Hoe SM, Anderson GC, Swinth JY, Thompson C, Hadeed AJ. Randomized controlled trial of kangaroo care: cardiorespiratory and thermal effects on healthy preterm infants. Neonatal Netw. 2004;23(3):39-48.
4. Conde-Agudelo A, Diaz-Rossello JL, Belizan JM. Kangaroo mother care to reduce morbidity and mortality in low birthweight infants. Cochrane Database Syst Rev. 2003; (2): 2771.
5. Charpak N, Ruiz-Pelaez JG, Figueroa de Calume Z, Charpak Y. Kangaroo mother care: 25 years after. Acta Paediatr. 2005;94(5): 514-522.
6. Tessier R, Charpak N, Giron M, Cristo M, de Calume ZF, Ruiz-Palaez JG. Kangaroo mother care, home environment and father involvement in the first year of life: a randomized controlled study. Acta Paediatr. 2009;98(9):1444-1450.
7. Kambarami RA, Chidede O. Kangaroo care: a better alternative to incubator care for well preterm infants in developing countries. Cent Afr J Med. 1999;45(4):89-93.
8. Feldman R, Eidelman AI. Skin-to-skin contact (kangaroo care) accelerates autonomic and neurobehavioural maturation in preterm infants. Dev Med Child Neurol. 2003;45(4):274-281.
9. Lawn JE, Mwansa-Kambafwile J, Horta BL, Barros FC, Cousens S. 'Kangaroo mother care' to prevent neonatal deaths due to preterm birth complications. Int J Epidemiol. 2010;39(1): 44-154.
10. Sivapriya S, Vinodhini R. Effectiveness of structured teaching programme on kangaroo care among mothers of preterm babies. Prism Nurs Pract. 2008;2(4):11-13.
11. Phalke VD. Appropriate technology: kangaroo mother care for low birth weight babies. Pravara Med Rev. 2006;1(2):10-12.
12. Singh H. Immediate cognitive impact of KMC workshop on medical students. In: Proceedings of Neocon XXIV, NNF Annual Convention; 2004; Chandigarh, India.